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Violence and Security

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**Ex oleo bellare?**  
**The Impact of Oil on the Outbreak of Militarized**  
**Interstate Disputes**

Georg Strüver and Tim Wegenast

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# **Ex oleo bellare?**

## **The Impact of Oil on the Outbreak of Militarized Interstate Disputes**

### **Abstract**

According to conventional wisdom, strategic natural resources like oil are harmful to international peace. Nonetheless, there is little empirical quantitative work on the link between resource abundance and interstate conflicts. Analyzing the impact of oil on militarized interstate disputes on a monadic level of analysis, this paper shows that oil in fact influences the conflict potential between countries. Results of logistic regressions suggest that a high absolute oil production is associated with an increased risk of dispute initiation. Per capita oil production, in contrast, does not seem to influence a country's propensity to start militarized conflicts. We also find that while very small oil-rich countries are more frequently the object of military actions, large oil producers seem to be generally spared from foreign attacks. We conclude that specific causal mechanisms such as an increased military capacity or the indulgence of the international community (rather than domestic political conditions inherent to the *rentier state*) might be particularly useful to explain our findings.

Keywords: oil, militarized interstate disputes, international conflicts, natural resources

JEL Code: F51, Q34

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# **Ex oleo bellare?**

## **The Impact of Oil on the Outbreak of Militarized Interstate**

**Georg Strüver and Tim Wegenast**

### **Article Outline**

- 1 Introduction
  - 2 Review of Research on Interstate Conflict, Institutions and Natural Resources
  - 3 Resources and Hard Power: The Arguments
  - 4 Research Design
  - 5 Quantitative Findings
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### **1 Introduction**

The idea that strategic natural resources – especially oil – promote international conflicts is largely perceived as conventional wisdom. Incidences of violence like the recent escalation of the Georgia–Russia crisis or Iraq’s invasion of Kuwait in 1990 underline the notion that oil-abundant countries are more prone to engaging in interstate disputes.<sup>1</sup> Indeed, it is hard to imagine the unremitting verbal power demonstrations of leaders such as Venezuela’s Hugo Chávez or Iran’s Mahmoud Ahmadinejad were it not for the oil-richness of their countries. Not seldomly, these power demonstrations result in diplomatic tensions or militarized disputes.

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<sup>1</sup> This paper was written as part of the project “Is Resource Wealth a Risk Factor?” funded by the German Research Foundation (DFG), at the GIGA German Institute of Global and Area Studies.

On one hand, resource-rich countries often appear to be the target of greedy aggressors in search of scarce and strategically important commodities. On the other hand, they are believed to be the malefactors themselves. For several reasons, we suspect that resource-abundant states may indeed be more tempted to resort to military solutions and initiate interstate disputes. Above all, resources seem to provide an opportunity for ignoring regular diplomatic means and adopting a more aggressive and oppressive foreign policy. Oil revenues can be used to build up a large military apparatus capable of intimidating any neighbor. Domestically, state leaders of fuel-rich countries often do not depend on the approval of large segments of society (e.g. because of the regime's lack of political competition and accountability) or are able to simply buy off political opponents by using resource rents. Thus, unilateral political decisions can be made without facing much internal opposition.

Furthermore, the involvement in interstate violence might be promoted by a series of other factors. Being dependent on oil exports, the international community may be more likely to tolerate the aggressive foreign policy of large oil exporters and be less inclined to levy sanctions or to intervene. Also, disputes over the ownership of specific resources are common along the national borders of resource-rich regions. Finally, resource-producing countries are often plagued by civil wars in which insurgents often hide out in neighboring states, creating international tensions. In addition, guerrilla movements are often supported by foreign regimes.

Although all the aforementioned explanations may sound plausible, there is surprisingly little quantitative comparative work on the link between resources and international conflicts. While a number of case studies have demonstrated the role of resources in explaining singular international conflicts, large cross-national comparisons are still lacking. This paper tries to overcome this shortcoming by asking whether countries rich in oil are more likely to initiate militarized interstate disputes (MID) and/or are more frequently the target of militarized aggressions than countries that lack substantial petroleum production.<sup>2</sup> To answer these questions, we employ logit estimations on a large panel of countries.

The paper proceeds in the following way: The next section reviews the existing literature focusing on the impact of oil on interstate conflicts. In addition, it summarizes the most important determinants of interstate disputes found in previous studies with a special emphasis on institutional variables. The possible causal mechanisms linking oil to MID initiation and MID targeting are presented subsequently. The employed quantitative research design is described in Section 4, which is followed by the paper's quantitative findings. Section 6 concludes and points to areas of future research.

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<sup>2</sup> We concentrate on oil as it has been the most important strategic resource for the world economy over the last several decades. Hardly any other resource exhibits the combined features of major industrial and social importance, high international prices, a low degree of substitutability, a widespread but uneven global distribution, and non-renewability. In addition, there is also a practical reason we chose to focus on oil: data on oil production in most countries is largely available.

## 2 Review of Research on Interstate Conflict, Institutions and Natural Resources

Scholarly work on interstate conflict remains largely silent on the impact of abundant natural resources on a government's decision to take up arms. Several studies consider either resource scarcity or the abundance of natural resources to be the main drivers of interstate warfare (e.g. Klare 2001, 2004, 2008; Peters 2004; Sharp 2007; Westing et al. 1986). However, in general, these studies only cite anecdotes as evidence to prove their arguments. Quantitative interstate conflict studies have failed to analyze the role of non-renewable natural resources as a cause of war. The main strands of quantitative literature on interstate disputes continue to find their basis in the "democratic peace" argument and its liberal economic extensions backed by Kantian philosophy (Doyle, 1983a, 1983b, 1986).

McDonald (2007, 2010) is one of the few authors that has indirectly assessed the role resources might have on interstate dispute potential. Analyzing the effect of non-tax revenue on interstate conflict, the author demonstrates at the monadic and dyadic levels of analysis that a large amount of public property (including incomes from the resource sector), increases the likelihood that a country will participate in MID. For one, high non-tax revenues exempt governments from their accountability, enabling them to implement and carry out domestically unpopular foreign policies. Such revenues also provide governments with the means to co-opt or repress potential opposition groups and movements that might form in response to the implementation of aggressive foreign policy strategies (McDonald 2007: 571-572). Furthermore, oppressive domestic politics and the disregard for human rights increase the chances that a nation will get involved in an MID (Caprioli and Trumbore 2006a).

To the best of our knowledge, one of the very few quantitative studies explicitly analyzing the natural resources–interstate conflict nexus was performed by de Soysa et al. (2009). Using the dyad-year as unit of analysis, the unpublished manuscript finds that dyads with one oil exporter are more likely to be involved in MID than dyads of two non-oil or two oil exporters. With regard to directed dyads, there is evidence that petroleum is only related to conflict if the initiator – not the target – is a petroleum exporter.<sup>3</sup> Concerning the possibility of disputes over the ownership of natural resources, a study by Braithwaite (2006) demonstrates that the presence of natural resources such as oil, diamonds and illicit drugs in a conflict-hosting country increases the remaining conflict parties' aspirations to gain territory, thereby contributing to the geographic spread of MID (ibid.: 515-516).<sup>4</sup>

The major contribution of these studies is to show that natural resources are relevant to the geographic spread of international conflicts and, from a dyadic perspective, that petro-

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<sup>3</sup> The observation does not hold true if only fatal disputes, i.e. militarized interstate disputes with at least one battle death, are included as the dependent variable (de Soysa et al. 2009: 14, 17).

<sup>4</sup> Besides, Stalley (2003) finds that different measures of resource scarcity are associated with interstate conflict. Higher levels of both soil degradation and population density, along with a high composite "environmental scarcity" (freshwater availability, degradation of fish stocks) score, but not water scarcity, are significantly and positively related to the onset of militarized interstate disputes between 1980 and 1992 (Stalley 2003: 48).

leum-exporting countries seem to be more belligerent than their oil-poor peers. The role of domestic regime characteristics – with the exception of democracy – and the impact of natural resources in relation to a country's population size are by and large neglected in both de Soysa et al. and Braithwaite. In contrast to de Soysa et al. (2009), we want to assess the general risk of an oil-rich country initiating international conflicts (and the risk they face becoming a target for militarized actions), irrespective of the resource endowment of other states. Therefore, we have chosen the monadic level of analysis. Furthermore, we differentiate between absolute and per capita oil production, as this might provide important clues about the causal mechanisms of the association between resources and interstate conflicts. Finally, besides democracy, our models control for alternative regime conditions.

As already mentioned, the so-called “democratic peace” literature has extensively considered states' regime types as a major force explaining international conflicts. Generally, it is assumed that domestic political constraints and liberal ideologies maintained in democracies reduce the ability of democratic leaders to pursue aggressive foreign policies. This observation is well documented in studies using the dyad-year as unit of analysis (e.g. Bennett and Stam 2000a; Maoz and Abdolali 1989; Oneal and Russett 1997, 1999a), and similar evidence exists at the state level of analysis (Benoit 1996; Boehmer 2008; Souva and Prins 2006). According to these studies, democracies, compared to mixed dyads, face a smaller risk of war with each other. Furthermore, it is assumed that democracies are generally more peaceful, irrespective of other countries' regime types.

In recent years, however, some studies have challenged the validity of the “democratic peace” argument at the monadic level by showing that democracy exhibits no pacifying effect (e.g. Quackenbusch and Rudy 2009), or that coefficients of democracy do not reach statistical significance (e.g. McDonald 2007, 2010). In a further specification of the “democratic peace” argument, Mansfield and Snyder (1995, 2002, 2002a) find that the risk of MID involvement is also higher if nations undergo incomplete democratic transitions.<sup>5</sup> Regarding specific regime characteristics, recent empirical work points to the necessity of introducing an autocratic antipode to the democratic peace, i.e. the “dictatorial peace” (Peceny, Beer and Sanchez-Terry 2002).<sup>6</sup> By including several regime and institutional variables in our analysis, we aim to bring further clarification to the contradictory results reported above.

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<sup>5</sup> Their main argument is that the absence of strong democratic institutions in transitional periods, e.g. a country's shift from autocracy to anocracy, undermines the accountability of political leaders in the eyes of the voting public and makes conflict more likely (Mansfield and Snyder 2002a: 537). For similar studies, see e.g. Daxecker 2007; Enterline 1998; Gleditsch and Ward 2000; Mansfield and Snyder 1995, 2002b.

<sup>6</sup> To explain the differences in conflict proneness of different authoritarian regime types (and between autocracies and democracies), Peceny and Butler use the “selectorate” theory (Bueno de Mesquita et al. 1999, 2004), which holds that large domestic winning coalitions reduce the ability of leaders to initiate interstate disputes. According to the authors, the reluctance of single-party regimes “to initiate disputes and the reluctance of others to target them, in comparison to other authoritarian regimes” results from the single-party regime's (possible) larger winning coalitions (Peceny and Butler 2004: 566-567).

The discussion of the literature reveals that few studies assess the impact of natural resources on international conflict. Also, only recently have researchers begun to open the black box of political regimes and study the impact of specific state characteristics at the monadic level unit of analysis. In the subsequent section, we assess pathways to interstate resource-related conflicts that combine insights from the study of international conflict, the role of regime characteristics, and the notion of disputes over the ownership of natural resources.

### **3 Resources and Hard Power: The Arguments**

Are resource-abundant countries indeed more belligerent and more often the target of interstate disputes, as is commonly asserted? There are certainly good reasons to suspect so. Probably the most direct and obvious examples of interstate animosities caused by natural resources involve greedy outsiders trying to appropriate another country's commodities. The most prominent case in point is Iraq's invasion of Kuwait in 1990.

Other examples of so-called "resource wars" involve disputes over commodities located near national borders. Inheriting borders based on vague or contradictory Spanish maps, Ecuador and Peru, for example, fought over the Cordillera del Cóndor, an area believed to be rich in oil and mineral reserves, for many years. Other cases of boundary disputes include the Chinese show of force against Vietnam regarding oil field explorations near the Spratly Islands, the dispute between Nigeria and Cameroon over the oil-rich territory in the Bakassi Peninsula Area, the tensions between Venezuela and Trinidad and Tobago over offshore oil exploration rights, and the Chinese-Indonesian conflict triggered by a natural gas field.

Besides providing a motive, resources may also provide the opportunity to gain or maintain hard power (Strüver 2010: 10). In economic terms, resource revenues may provide the financial means for a state to build up a large military apparatus. Basedau and Lay (2009) and Snyder and Bhavnani (2005), for example, stress the idea that high levels of abundance may be used to establish an effective and large security apparatus.

Politically, leaders of resource-rich countries are frequently not accountable to the population, do not face political opposition, and/or do not depend on congressional approval. As shown by Gandhi and Przeworski (2006) and Wegenast (2010: 12), among others, heads of states that enjoy high resource revenues make fewer institutional concessions – such as establishing a formal legislature or allowing multiple political parties. In many cases, resource-rich countries exhibit stable autocratic regimes (Ulfelder 2007; Mesquita and Smith 2009). Thus, leaders resting on oil revenues are, in general, less constrained by political veto points and enjoy more autonomy in their foreign policy decisions. In addition to facing weaker domestic opposition, they may also encounter less repression by the international community:



interested in maintaining good relations to guarantee steady oil or gas imports, other countries may be less inclined to sanction resource exporters.<sup>7</sup>

Aside from possibly facing less domestic and international political opposition, governments of resource-abundant countries are not heavily dependent on taxes as a source of state income. Not being considerably taxed, citizens are more detached from the political decision-making process. They feel less inclined to monitor their incumbents and may have less information about government behavior. Accordingly, the state may feel less compelled to meet the population's demands. The consequences may be the weakening of state–society linkages (see Humphreys 2005). This lack of state responsiveness may encourage a government's autonomy and alienation in foreign policy matters and contribute to the exertion of violence against a foreign country (McDonald 2007).

Finally, natural resources may instigate international conflicts in a more indirect manner. As put forward by a rapidly growing literature, commodities such as oil, gas or diamonds may – under certain conditions – promote intrastate violence and civil wars (see e.g. Collier and Hoeffler 2004; Humphreys 2005; Dixon 2009; Wegenast and Basedau 2010). Internal violence can contribute to interstate disputes – for example, when rebels try to hide behind the borders of neighboring countries, or when soldiers fight insurgents on foreign territory. Also, states often interfere in the internal affairs of conflict-ridden countries by supporting one of the fighting parties.

There are plenty of examples of the interaction between domestic and international conflicts. The 1,200-mile border between Colombia and Venezuela, for example, has frequently been the scene of incidents involving Colombian guerrilla fighters and Venezuelan military forces. Alleged violations by guerrilla movements of the borders between Kenya and Uganda, Togo and Ghana, Uganda and Sudan, and Zaire and Uganda, among many others, have also served as motives for international disputes between these states. Concerning third-party interference in civil wars, Angolan support for the rebel troops in the Democratic Republic of the Congo (DRC) is certainly a prime example. Other examples are Sudan accusing Ethiopia of actively supporting Sudanese rebels, Zaire (now DRC) accusing Rwanda of supporting anti-government rebels, and Turkey's allegations of Syria supporting the Kurds.

The next section attempts to demonstrate the quantitative support for the outlined effect of natural resources on militarized interstate disputes. In particular, we assess the effects of petroleum production on MID involvement (as initiator or target) in absolute and per capita terms, and we account for the interaction between domestic and international conflicts. It is therefore important to note that this paper will not specifically test each of the proposed causal mechanisms in detail. Rather, the principle aim of our empirical analysis is to find evidence for the oft-claimed idea that oil enhances the potential for international conflict.

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<sup>7</sup> Many European foreign ministers and heads of state avoid broaching the issue of civil rights violations when meeting with Russian colleagues, for example.

#### 4 Research Design

To study the impact of natural resource endowment on a nation's propensity to either initiate or be the target of interstate disputes, we chose a monadic-level research design. That is to say, we expect domestic effects (rather than bilateral conditions) to be among the most important determinants of conflict participation. It seems plausible to assume that domestic conditions associated with oil availability (e.g. military strength, the degree of political constraints, weak state–society relationships, internal violence) and the indulgence of an oil-dependent international community – rather than the resource endowment of country-pairs – are especially likely to explain states' involvement in militarized disputes. Furthermore, a country's oil deposits may instigate greedy intentions abroad (regardless of the aggressor's petroleum endowment). The state-year as the unit of analysis is especially capable of treating causal explanations that are inherently monadic (e.g. Bussmann 2010: 145; Souva and Prins 2006: 184–185). For instance, if a weak state–society relationship as a consequence of high fiscal autonomy decouples regime survival from its policy performance and makes the implementation of aggressive foreign policies more feasible, then this mechanism should function regardless of specific characteristics of dyadic counterparts.

The analytical section of this paper employs time-series cross-sectional data and logistic regression estimation.<sup>8</sup> Our dependent variable is a nation's participation in international military conflict (as an initiator or as a target). To measure military conflict, we use Correlates of War data on militarized interstate disputes (Ghosn, Palmer and Bremer 2004; Jones, Bremer and Singer 1996). Militarized interstate disputes (MID) are historical instances between sovereign states in which the threat, showing off or employment of military force by one country “is explicitly directed towards the government, official representatives, official forces, property, or territory of another state” (Jones, Bremer and Singer 1996: 168) and can be nonfatal.<sup>9</sup> In 1998, for instance, Chinese armed vessels in the South China Sea provoked a show of force by the Philippines, the arrest of 20 Chinese fishermen fishing on the Spratly Islands, and finally the firing of warning shots at a Chinese fishing boat. No fatalities occurred during this militarized incidence. In contrast, the use of military forces during the Alto Cenepa War between Ecuador and Peru over the Cordillera del Cóndor area in 1995 claimed over one hundred lives.

To distinguish between different forms of MID participation, we coded two variables: The first (*midinitiation*) is coded as 1 if a nation initiated a militarized action and 0 otherwise. The second (*midtarget*) is coded as 1 whenever a state was the target of an interstate dispute in a given country-year. As we expect natural resources to effect the outbreak of minor as

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<sup>8</sup> An overview of the variables used in this study, along with their definitions and sources, is given in Table A1 in the Appendix. Table A2 reports descriptive statistics. The population of the dataset was generated using the EUGene software (Version 3.204) (Bennett and Stam 2000b).

<sup>9</sup> The notion of “MID” encompasses five types of international disputes characterized by different escalation levels: no militarized action, threat of force, display of force, use of force, and war.

well as more severe conflicts, at this stage of research we do not control for the occurrence of battlefield death as discussed in prior studies (e.g. Keshk, Reuveny and Pollins 2010; Oneal, Russett and Bernbaum 2003; Busmann 2010).

The study's main explanatory variable of resource abundance (*oil*) reflects the amount of oil extracted per day in a given year and is measured in millions of barrels (Humphreys 2005). High levels of absolute oil production serve as a proxy for the motive mechanism, and rents from petroleum production provide the material capabilities for hard power, i.e. the build-up of the military apparatus. To control for the effect of oil production in relation to a country's size, we further include a per capita version of resource production (*pc\_oil*). Measuring oil abundance in per capita terms allows us to better describe the possibility of using resource rents for large-scale distributional policies and for repression of the political opposition, and it serves as a proxy for the weak-state mechanism.

Among the institutional variables, we measure a nation's level of democracy and competitiveness as well as different regime characteristics. While the "democratic peace" argument is less conclusive on the monadic level, numerous dyadic studies suggest a robust support for pacifying effects in democratic regimes (e.g. Benoit 1996; Bennett and Stam 2000a; Oneal and Russett 1999a; Quackenbush and Rudy 2009). Hence, we control for democracy by using the *polity2* variable of the Polity 4 data, which measures the democracy level of a country on a scale from 10 to -10 (Jagers and Gurr 1995). A binary variable (*democracy*) is coded as 1 if a country is a "coherent" democracy and 0 otherwise.<sup>10</sup> We further include a variable for competitive regimes (*compet*) that equals 1 if an electoral system is considered competitive (whenever the variable *parcomp* from the Polity 4 data equals 4; see Jagers and Gurr, 1995). Regarding the regime type, we included binary-coded variables that equal 1 if a nation is a military state (*military*) (Norris 2009).

In order to test the argument that ongoing civil wars in resource-rich countries increase the risk of international conflict outbreak, we included two variables that measure the existence of intrastate violence. The incidence of internal and internationalized internal violence is measured by drawing on UCDP/PRIO conflict data. *Incidence* takes the value of 1 if at least one internal conflict is active in a country-year (Harbom and Wallensteen 2010; Gleditsch et al. 2002). As an alternative, we include a variable measuring the total violence impact of civil and ethnic war, e.g. casualties, refugees, infrastructure damages and war-related diseases (*violence*) (Englehart 2009).

To ensure the robustness of results and model fitness, we included a further set of common control variables in addition to the regime variables (e.g. Boehmer 2008; McDonald 2010; Souva and Prins 2006). The variable *neighbors* takes into account the total number of neighbors a country has by land or sea (Stinnett et al. 2002). Various studies suggest that an increase in the number of neighbors makes MID onsets more likely. Also positively related to

<sup>10</sup> Jagers and Gurr (1995: 473-474) define a "coherent" democracy as countries "with DEMOC – AUTOC scores of positive 7 to positive 10."

conflict are national material capabilities (*capabilities*) (Singer 1987).<sup>11</sup> Several studies show that economic interdependence and trade openness reduce a country's probability of conflict involvement (Bussmann 2010; Hegre 2000; Maoz 2009; Oneal and Russett 1999b). We measure the commercial dependence by the number of exports and imports as a portion of GDP based on the United Nation's International Merchandise Trade Statistics and the World Bank's World Development Indicators (*tradeopenness*). Finally, we included a variable reflecting the duration since the last militarized dispute outbreak (*peaceyears*) to minimize problems of temporal dependence on conflict history (Beck, Katz and Tucker 1998).

## 5 Quantitative Findings

Table 1 shows the effects of total oil production and different institutional variables, as well as several control variables on the risk of initiating a MID. In line with our expectations, oil abundant countries are more likely to initiate militarized interstate disputes. The coefficients for *oil* are positive and highly significant throughout all models (see Table 1). Expressed in odds ratio, an increase of 1 million oil barrels per day makes conflict initiation 13–14% more likely (depending on the model specification).

Rather surprisingly, institutional or regime variables such as the level of democracy (as measured by *polity2*) or the competitiveness of political participation (*compet*) – reported to reduce the risk of MID involvement in prior monadic studies (e.g. Boehmer, 2008) – do not show up as significant in our estimations (see Model 1 and Model 4 of Table 1, respectively). Only military states are more likely to initiate interstate disputes (see Model 5 of Table 1). Being a military state increases the odds for conflict initiation by approximately 64%.<sup>12</sup>

The remaining control variables are largely in line with the findings of previous studies. While total number of neighbors (*neighbors*) and the level of national material capabilities (*capability*) consistently increase the risk of MID initiation, economically more open states (*tradeopenness*) are less likely to pose a military threat.

To further explore the effect of resources on MID initiation, we recalculated all models using per capital production of oil instead of employing absolute figures. By using this strategy, we are able to assess the plausibility of some of the outlined causal mechanisms. The finding that total oil production is positively associated with dispute initiation supports the argument that oil-abundant countries have the military potential (e.g. by building up a large military apparatus) to engage in interstate conflicts. Furthermore, it may also be evidence that

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<sup>11</sup> The Composite Index of National Capability (CINC) score combines demographic, industrial, and military indicators of material capabilities, i.e. military personnel and expenditure, population, iron and steel, as well as energy consumption.

<sup>12</sup> It is important to note that other institutional and regime variables such as “coherent” democracies and autocracies, single-party regimes, single-party, military-personalist regimes, and winning coalition size – not reported here due to space constraints – were considered by our estimations. None of them reached statistical significance.

the international community is more indulgent with large oil producers and that internal conflict may further international tensions (e.g. by generating frontier issues caused by guerilla movement). This assumption is confirmed by Model 6 and 7 of Table 1: the incidence of intrastate armed conflicts (*incidence*) spurs the risk of international disputes by 60%, and the violence impact of internal civil and ethnic violence (*violence*) spurs it by 8%.

**Table 1: Total Oil Production and MID Initiation, 1960–2001**

|                              | (1)                     | (2)                     | (3)                     | (4)                     | (5)                     | (6)                     | (7)                     |
|------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                              | mid_initiation          | mid_initiation          | mid_initiation          | mid_initiation          | mid_initiation          | mid_initiation          | mid_initiation          |
| peaceyears                   | -0.0991****<br>(0.0131) | -0.0990****<br>(0.0132) | -0.0978****<br>(0.0133) | -0.0959****<br>(0.0133) | -0.0890****<br>(0.0121) | -0.0937****<br>(0.0130) | -0.0952****<br>(0.0130) |
| neighbors <sub>t-1</sub>     | 0.0811****<br>(0.0166)  | 0.0811****<br>(0.0167)  | 0.0824****<br>(0.0169)  | 0.0829****<br>(0.0171)  | 0.0885****<br>(0.0194)  | 0.0753****<br>(0.0169)  | 0.0750****<br>(0.0169)  |
| capabilities <sub>t-1</sub>  | 10.98***<br>(3.553)     | 11.12***<br>(3.512)     | 11.82***<br>(3.599)     | 12.90****<br>(3.670)    | 14.54****<br>(3.876)    | 11.73****<br>(3.328)    | 10.77***<br>(3.338)     |
| tradeopenness <sub>t-1</sub> | -0.727***<br>(0.226)    | -0.721***<br>(0.225)    | -0.679***<br>(0.224)    | -0.637***<br>(0.219)    | -0.626**<br>(0.257)     | -0.594***<br>(0.221)    | -0.643***<br>(0.222)    |
| oil <sub>t-1</sub>           | 0.127***<br>(0.0458)    | 0.125***<br>(0.0452)    | 0.120***<br>(0.0456)    | 0.118***<br>(0.0455)    | 0.0934**<br>(0.0472)    | 0.134***<br>(0.0444)    | 0.136***<br>(0.0449)    |
| polity2 <sub>t-1</sub>       | 0.00266<br>(0.00732)    |                         |                         |                         |                         |                         |                         |
| democracy <sub>t-1</sub>     |                         | 0.0290<br>(0.113)       |                         |                         |                         |                         |                         |
| parcomp <sub>t-1</sub>       |                         |                         | -0.00800<br>(0.0357)    |                         |                         |                         |                         |
| compet <sub>t-1</sub>        |                         |                         |                         | -0.196<br>(0.133)       |                         |                         |                         |
| military <sub>t-1</sub>      |                         |                         |                         |                         | 0.494**<br>(0.200)      |                         |                         |
| incidence <sub>t-1</sub>     |                         |                         |                         |                         |                         | 0.472****<br>(0.127)    |                         |
| maccetot <sub>t-1</sub>      |                         |                         |                         |                         |                         |                         | 0.0767***<br>(0.0291)   |
| _cons                        | -1.396****<br>(0.177)   | -1.409****<br>(0.178)   | -1.414****<br>(0.196)   | -1.426****<br>(0.180)   | -1.487****<br>(0.217)   | -1.550****<br>(0.183)   | -1.472****<br>(0.180)   |
| N                            | 2938                    | 2938                    | 2883                    | 2883                    | 2258                    | 2937                    | 2929                    |
| pseudo R <sup>2</sup>        | 0.150                   | 0.150                   | 0.151                   | 0.152                   | 0.167                   | 0.155                   | 0.153                   |

Standard errors in parentheses \* p<0.10, \*\* p<0.05, \*\*\* p<0.01, \*\*\*\* p<0.001

Source: Authors' compilation

Employing the per capita version of oil production, we can better target the political opportunity channel: political leaders need high oil revenues proportional to the total population to be able to buy off the opposition, oppress political dissidents, enjoy more fiscal autonomy and face less pressure to legitimize. As evident from Table 2 below, no empirical evidence can be found for this political opportunity mechanism. The coefficient for per capita oil pro-

duction does not reach significance at conventional statistical levels (see Model 1 of Table 2). The results for the remaining control variables remained largely unchanged.<sup>13</sup>

In order to avoid high values for per capita resource production due to countries' low populations, we dropped states with fewer than 2 million inhabitants from the sample in Model 4 to 6 of Table 2. Excluding very small countries does not alter the results significantly: with the exception of Model 5, a high per capita oil production is still not associated with an increased risk of MID initiation. This result suggests that the political channel by which oil-rich leaders face fewer internal veto points, weaker state–society linkages and enjoy more autonomy in their foreign policy decisions is less likely to explain conflict initiation. The lack of statistical significance for the tested regime and institutional variables lends additional support to this view.

**Table 2: Per Capita Oil Production and MID Initiation, 1960–2001**

|                                   | (1)                     | (2)                     | (3)                     | (4)  | (5)  | (6)  |
|-----------------------------------|-------------------------|-------------------------|-------------------------|--|--|--|
|                                   | mid_initiation          | mid_initiation          | mid_initiation          | mid_initiation<br>(excl. small<br>countries) | mid_initiation<br>(excl. small<br>countries) | mid_initiation<br>(excl. small<br>countries) |
| peaceyears                        | -0.0898****<br>(0.0121) | -0.0960****<br>(0.0132) | -0.0977****<br>(0.0132) | -0.0923****<br>(0.0126)                      | -0.0997****<br>(0.0139)                      | -0.102****<br>(0.0139)                       |
| neighbors <sub>t-1</sub>          | 0.0980****<br>(0.0194)  | 0.0835****<br>(0.0168)  | 0.0838****<br>(0.0168)  | 0.0818****<br>(0.0202)                       | 0.0665****<br>(0.0175)                       | 0.0667****<br>(0.0175)                       |
| capabilities <sub>t-1</sub>       | 18.44****<br>(2.924)    | 17.25****<br>(2.490)    | 16.49****<br>(2.467)    | 18.32****<br>(2.906)                         | 17.19****<br>(2.512)                         | 16.40****<br>(2.480)                         |
| tradeopen-<br>ness <sub>t-1</sub> | -0.482**<br>(0.244)     | -0.448**<br>(0.209)     | -0.494**<br>(0.210)     | -0.396<br>(0.246)                            | -0.314<br>(0.211)                            | -0.359*<br>(0.212)                           |
| pc_oil <sub>t-1</sub>             | -0.202<br>(0.303)       | -0.0572<br>(0.217)      | -0.0730<br>(0.221)      | 0.567<br>(0.574)                             | 0.891*<br>(0.539)                            | 0.860<br>(0.542)                             |
| military <sub>t-1</sub>           | 0.513**<br>(0.200)      |                         |                         | 0.472**<br>(0.200)                           |  |  |
| incidence <sub>t-1</sub>          |                         | 0.447****<br>(0.127)    |                         |  | 0.436****<br>(0.128)                         |  |
| maccetot <sub>t-1</sub>           |                         |                         | 0.0667**<br>(0.0294)    |  |  | 0.0643**<br>(0.0293)                         |
| _cons                             | -1.584****<br>(0.217)   | -1.623****<br>(0.183)   | -1.546****<br>(0.180)   | -1.474****<br>(0.218)                        | -1.526****<br>(0.184)                        | -1.447****<br>(0.181)                        |
| N                                 | 2258                    | 2937                    | 2929                    | 2035   | 2635   | 2627   |
| pseudo R <sup>2</sup>             | 0.165                   | 0.151                   | 0.149                   | 0.156  | 0.145  | 0.142  |

Standard errors in parentheses \* p<0.10, \*\* p<0.05, \*\*\* p<0.01, \*\*\*\* p<0.001

Source: Authors' compilation

The next regression analysis seeks empirical support for the widely claimed hypothesis that oil-rich states are often the target of greedy outsiders. Table 3 below shows that it is not necessarily so. On the contrary, large oil producers seem often to be spared from the attacks of

<sup>13</sup> As all other regime variables turned out to be non-significant in the previous analysis, we included only military states (*military*) in the models reported in Table 2.

belligerent aggressors. The coefficient for *oil* is negative and significant at the 10% level. A daily increase of 1 million barrels reduces the probability of suffering a militarized interstate dispute by approximately 11% (Model 1 of Table 3). Thus, countries seem reluctant to start military animosities against oil-abundant countries. This may be for various reasons: potential aggressors may, for example, not want to compromise oil exports or may fear the military apparatus of petro-states.

Of the included regime variables, only political competitiveness seems to have an effect on the risk of being an MID target. The variable *compet* is positive and significant, indicating that states enjoying a competitive electoral system are more frequently the target of military actions (see Model 4 of Table 3). As noted for MID initiation, internal civil and ethnic violence also affects the potential to be targeted. Thus, episodes of border violations caused by guerrilla activities or the sponsorship of insurgents by foreign countries may indeed make interstate disputes more likely (see Model 7 of Table 3). Nevertheless, the coefficient of incidence of intrastate armed conflicts does not reach statistical significance (see Model 6 of Table 3).

**Table 3: Oil Production and MID Targets, 1960–2001**

|                              | (1)         | (2)         | (3)         | (4)         | (5)         | (6)         | (7)         |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                              | mid_target  | mid_target  | mid_target  | mid_target  | mid_target  | mid_target  | mid_target  |
| peaceyears                   | -0.0728**** | -0.0727**** | -0.0750**** | -0.0748**** | -0.0687**** | -0.0720**** | -0.0723**** |
|                              | (0.0111)    | (0.0111)    | (0.0113)    | (0.0113)    | (0.0103)    | (0.0111)    | (0.0111)    |
| neighbors <sub>t-1</sub>     | 0.0364**    | 0.0364**    | 0.0346**    | 0.0350**    | 0.0319      | 0.0339**    | 0.0327*     |
|                              | (0.0167)    | (0.0168)    | (0.0168)    | (0.0167)    | (0.0195)    | (0.0170)    | (0.0170)    |
| capabilities <sub>t-1</sub>  | 7.503**     | 7.643**     | 7.038**     | 6.428*      | 4.895       | 7.999**     | 7.394**     |
|                              | (3.532)     | (3.516)     | (3.525)     | (3.535)     | (4.031)     | (3.528)     | (3.523)     |
| tradeopenness <sub>t-1</sub> | 0.0706      | 0.0741      | 0.0402      | 0.0366      | -0.141      | 0.113       | 0.103       |
|                              | (0.152)     | (0.151)     | (0.158)     | (0.161)     | (0.194)     | (0.149)     | (0.150)     |
| oil <sub>t-1</sub>           | -0.111*     | -0.113*     | -0.108*     | -0.107*     | -0.112*     | -0.111*     | -0.106*     |
|                              | (0.0637)    | (0.0637)    | (0.0638)    | (0.0636)    | (0.0653)    | (0.0645)    | (0.0641)    |
| polity2 <sub>t-1</sub>       | 0.00308     |             |             |             |             |             |             |
|                              | (0.00737)   |             |             |             |             |             |             |
| democracy <sub>t-1</sub>     |             | 0.0311      |             |             |             |             |             |
|                              |             | (0.112)     |             |             |             |             |             |
| parcomp <sub>t-1</sub>       |             |             | 0.0367      |             |             |             |             |
|                              |             |             | (0.0357)    |             |             |             |             |
| compet <sub>t-1</sub>        |             |             |             | 0.240**     |             |             |             |
|                              |             |             |             | (0.121)     |             |             |             |
| military <sub>t-1</sub>      |             |             |             |             | -0.410      |             |             |
|                              |             |             |             |             | (0.283)     |             |             |
| incidence <sub>t-1</sub>     |             |             |             |             |             | 0.232       |             |
|                              |             |             |             |             |             | (0.144)     |             |
| maccetot <sub>t-1</sub>      |             |             |             |             |             |             | 0.0542*     |
|                              |             |             |             |             |             |             | (0.0322)    |
| _cons                        | -1.686****  | -1.698****  | -1.748****  | -1.708****  | -1.406****  | -1.737****  | -1.714****  |
|                              | (0.163)     | (0.170)     | (0.191)     | (0.169)     | (0.195)     | (0.166)     | (0.163)     |
| N                            | 2938        | 2938        | 2883        | 2883        | 2258        | 2937        | 2929        |
| pseudo R <sup>2</sup>        | 0.046       | 0.046       | 0.048       | 0.049       | 0.052       | 0.047       | 0.047       |

Standard errors in parentheses \* p<0.10, \*\* p<0.05, \*\*\* p<0.01, \*\*\*\* p<0.001

Source: Authors' compilation

While absolute abundance of oil seems to spare countries from suffering militarized actions by foreign states, it is unclear whether the same holds true for oil richness in per capita terms. Surprisingly, Models 1 to 3 of Table 4 reveal that high per capita oil abundance appears to increase a country's risk of being militarily targeted. However, this finding is restricted to small oil-producing countries. When countries with fewer than 2 million inhabitants are excluded from the analysis, the coefficient for *pcoil* loses its statistical significance (Models 4 to 6 of Table 4). Thus, size seems to matter when deciding whether to threaten an oil-rich country. While big producers are found to be less frequently targeted, small countries with high per capita amounts of oil extraction are more often subject to foreign military activity.

As standard logit or probit estimations may produce biased coefficients when binary dependent variables measure the occurrence of "rare events," all models were re-estimated using "rare event logit models" (see King and Zeng, 2001). Results did not change considerably.<sup>14</sup> Furthermore, a step-by-step inclusion of all independent variables in the different models indicated that the reported coefficients are unlikely to be driven by multicollinearity. The variance inflation factor (*VIF*) confirms this presumption. Finally, likelihood ratio tests of the reported specification against several different nested models revealed that the applied full models have a proper specification.

**Table 4: Per Capita Oil Production and MID Targets, 1960–2001**

|                                   | (1)                     | (2)                     | (3)                     | (4)                                      | (5)                                      | (6)                                      |
|-----------------------------------|-------------------------|-------------------------|-------------------------|--|--|--|
|                                   | mid_target              | mid_target              | mid_target              | mid_target<br>(excl. small<br>countries) | mid_target<br>(excl. small<br>countries) | mid_target<br>(excl. small<br>countries) |
| peaceyears                        | -0.0748****<br>(0.0114) | -0.0719****<br>(0.0112) | -0.0723****<br>(0.0112) | -0.0711****<br>(0.0118)                  | -0.0676****<br>(0.0116)                  | -0.0682****<br>(0.0115)                  |
| neighbors <sub>t-1</sub>          | 0.0309*<br>(0.0162)     | 0.0288*<br>(0.0164)     | 0.0272*<br>(0.0165)     | 0.0246<br>(0.0174)                       | 0.0217<br>(0.0177)                       | 0.0197<br>(0.0178)                       |
| capabilities <sub>t-1</sub>       | 2.090<br>(2.148)        | 3.772*<br>(2.086)       | 3.391<br>(2.103)        | 2.474<br>(2.143)                         | 4.225**<br>(2.067)                       | 3.791*<br>(2.079)                        |
| tradeopen-<br>ness <sub>t-1</sub> | -0.0491<br>(0.175)      | 0.0403<br>(0.160)       | 0.0355<br>(0.160)       | -0.124<br>(0.203)                        | -0.0129<br>(0.180)                       | -0.0217<br>(0.180)                       |
| pc_oil <sub>t-1</sub>             | 0.465**<br>(0.209)      | 0.453**<br>(0.208)      | 0.454**<br>(0.208)      | -0.0382<br>(0.643)                       | 0.0470<br>(0.620)                        | 0.0635<br>(0.617)                        |
| compet <sub>t-1</sub>             | 0.278**<br>(0.122)      |                         |                         | 0.261**<br>(0.129)                       |  |  |
| incidence <sub>t-1</sub>          |                         | 0.265*<br>(0.144)       |                         |  | 0.307**<br>(0.146)                       |  |
| maccetot <sub>t-1</sub>           |                         |                         | 0.0663**<br>(0.0317)    |  |  | 0.0727**<br>(0.0316)                     |
| _cons                             | -1.690****<br>(0.170)   | -1.716****<br>(0.166)   | -1.696****<br>(0.163)   | -1.643****<br>(0.181)                    | -1.696****<br>(0.176)                    | -1.667****<br>(0.173)                    |
| N                                 | 2883                    | 2937                    | 2929                    | 2581                                     | 2635                                     | 2627                                     |
| pseudo R <sup>2</sup>             | 0.049                   | 0.047                   | 0.047                   | 0.043                                    | 0.042                                    | 0.042                                    |

Standard errors in parentheses p<0.10, \*\* p<0.05, \*\*\* p<0.01, \*\*\*\* p<0.001

Source: Authors' compilation

<sup>14</sup> The results are available upon request.



### *Discussion of Results*

The results presented have two major implications. First, resources such as oil may indeed instigate violence in the form of militarized interstate disputes, as is often claimed by experts and the media. Our analysis showed that large absolute amounts of petroleum are conducive to MID initiation. At the same time, high per capita levels of this commodity do not affect the risk of dispute initiation. In our view, these findings may be indicative of specific channels linking oil to MID initiation.

On one hand, large absolute amounts of oil can be associated with the capability of building up a large military apparatus, with greater economic value for the international community or with an enhanced risk of suffering internal conflicts. On the other hand, higher per capita levels of oil help state leaders oppress or buy off the opposition, to weaken pressure to legitimize and to face less political veto points. Thus, we believe that especially the former mechanisms related to absolute oil richness may be at work.

Second, the risk faced by oil-abundant countries of being militarily targeted seems to be conditional on their size. While large producers (in absolute terms) are often spared from external aggressions, smaller states enjoying high per capita revenues are more frequently subject to military actions by outsiders. Countries such as Kuwait, Bahrain, Oman, the United Arab Emirates and Trinidad and Tobago have repeatedly suffered aggressions by foreign nations.

Finally, the lack of statistical significance for many regime and institutional variables (including the level of democracy or competitiveness of participation as defined by *polity2*) casts doubt on the robustness of the findings put forward by some previous studies (e.g. Boehmer 2008; Caprioli and Trumbore 2006b; Souva and Prins 2006). Rather, it confirms recent results from Quackenbush and Rudy (2009: 268) that indicate that “there is little, if any, empirical support for the monadic democratic peace.” Moreover, it seems time to abandon the general debates over the democracy–autocracy dichotomy as a predictor of militarized interstate disputes and to instead concentrate on more specific institutional or regime characteristics as possible causes of international violence.

## **6 Conclusion**

Is oil as bad for international peace as often assumed? In fact, our analysis finds support for a rather Machiavellian aspect of this commodity. Large oil producers employ hard power more frequently, provoking international disputes. The same, however, does not apply to states with high per capita oil revenues. It seems that petroleum extraction increases the risk of MID initiation especially by enhancing countries’ military capabilities, taming the resource-dependent international community and giving rise to internal armed conflicts. Domestic political conditions associated with less political dissidence or weak state–society linkages, in contrast, seem to play a subordinate role in explaining the oil–interstate conflict linkage.

Instances in which one state is assaulted by a (possibly greedy) aggressor striving for resources seem to be restricted to small oil-rich countries. Our results suggest that high absolute amounts of oil are associated with a reduced risk of being militarily targeted. In contrast, small states exhibiting high per capita revenues are more often challenged by foreign nations.

However, a note of caution regarding the applicability of specific causal mechanisms is warranted. The primary aim of this paper was to find empirical evidence for the possible effect of petroleum on militarized interstate disputes (both as initiator and as target). Despite providing some plausible explanations for the obtained findings, our analysis cannot be viewed as a definitive test for specific causal channels. Thus, future research should concentrate on the precise mechanisms linking resource-rich countries to interstate conflicts. For this purpose, our distinction between *absolute* and *per capita* oil revenues appears a useful empirical trail to follow.

Besides conducting a more precise analysis of the pertinent mechanisms explaining the relationship between oil and militarized interstate disputes, it would be interesting to investigate whether natural resources promote militarized disputes between resource-scarce states. According to many observers, Afghanistan's abundance of lithium, for example, may fuel interstate conflicts between several global players interested in exploring this mineral. For this reason, future studies should try to include a wider range of natural resources such as minerals or agricultural goods.

In addition to providing findings on the resource–conflict nexus, our results corroborate recent studies showing that democratic regimes are *not* less likely to initiate militarized interstate disputes at the monadic level of analysis. The general belief that democracies are more reluctant to engage in power demonstrations and employ military means seems not to hold. Generally speaking, democratic peace research on the monadic level has received relatively scant attention and deserves further exploration. Moreover, independent of the level of analysis, it seems time to abandon the rigid concentration on the democracy–autocracy dichotomy and to begin to unveil the precise domestic institutional characteristics that promote countries' peaceful coexistence.

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## Annex

Table A1: Variable Definitions and Data Sources

| <i>Variable</i> | <i>Definition</i>   | <i>Source</i>  |
|-----------------|---|--|
| mid_initiation  | coded 1 if a country is the initiator (= side A) in a Militarized Interstate Dispute, and 0 otherwise | Ghosn, Palmer and Bremer 2004; Jones, Bremer and Singer 1996, MID Version 3.10   |
| mid_target      | coded 1 if a country is the target (= side B) in a Militarized Interstate Dispute, and 0 otherwise    | Ghosn, Palmer and Bremer 2004; Jones, Bremer and Singer 1996, MID Version 3.10   |
| peaceyears      | years since last onset of dependent variable  | own coding   |
| neighbors       | total number of direct contiguities for this state this year (land or sea)                            | Stinnett et al. 2002, Direct Contiguity Version 3.1  |
| capabilities    | National Capability Index   | Singer 1987 (generated with EUGene v3.204)   |
| tradeopenness   | trade as a proportion of GDP  | United Nations Comtrade Database (merchandise imports and exports; online: < <a href="http://comtrade.un.org/db/">http://comtrade.un.org/db/</a> >, 23.07.2010); World Bank's World Development Indicators (GDP in current USD; online: < <a href="http://data.worldbank.org/data-catalog/world-development-indicators">http://data.worldbank.org/data-catalog/world-development-indicators</a> >, 14.09.2010) |
| oil             | oil production (in million barrels per day)   | Humphreys 2005   |
| pc_oil          | per capita oil production (barrels per person per day)  | Humphreys 2005   |
| polity2         | revised combined polity score, ranges from -10 (strongly autocratic) to +10 (strongly democratic)     | Jagers and Gurr 1995, Version Polity IV 2004e (generated with EUGene v3.204)   |
| democracy       | coded 1 for "coherent democracy," i.e. $polity2 \geq 6$ , and 0 otherwise                             | own coding based on <i>polity2</i>   |
| parcomp         | competitiveness of political participation, ranges from 1 (repressed) to 5 (competitive)              | Jagers and Gurr 1995, Version Polity IV 2004e (generated with EUGene v3.204)   |
| compet          | coded 1 if <i>parcomp</i> = 5 (competitive), and 0 otherwise  | own coding based on <i>parcomp</i>   |
| military        | 1 if the country is a military state, and 0 otherwise   | Norris 2009 (as given in the Quality of Government Data by Teorell et al. 2010)  |
| incidence       | 1 if at least one active conflict in a country-year, and 0 otherwise                                  | Harbom and Wallensteen 2010 (Version 4-2010); Gleditsch et al. 2002  |
| violence        | total civil and ethnic war and violence impact  | Englehart 2009 (original data from Marshall and Gurr 2005)   |

Source: Author's compilation.

**Table A2: Descriptive Statistics**

| <i>Variable</i>                   | <i>Observations</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Mean</i> | <i>Standard<br/>Deviation</i> |
|-----------------------------------|---------------------|----------------|----------------|-------------|-------------------------------|
| mid                               | 6591                | 0              | 1              | 0.2846306   | 0.4512725                     |
| mid_initiation                    | 6507                | 0              | 1              | 0.168895    | 0.374688                      |
| peaceyears (for mid)              | 6591                | 0              | 39             | 4.795175    | 6.568716                      |
| peaceyears<br>(for midinitiation) | 6507                | 0              | 42             | 8.021208    | 9.018469                      |
| neighbors                         | 6590                | 0              | 29             | 5.533687    | 3.241343                      |
| capabilities                      | 6590                | 0              | 0.22912        | 0.0065286   | 0.0210429                     |
| tradeopenness                     | 3708                | 0.0217931      | 9.526149       | 0.5290929   | 0.4883994                     |
| oil                               | 5237                | -0.01655       | 10.0925        | 0.324711    | 1.117682                      |
| pc_oil                            | 5237                | -0.0003791     | 4.923469       | 0.0447891   | 0.2702768                     |
| polity2                           | 5908                | -10            | +10            | -0.3879485  | 7.522449                      |
| democracy                         | 5908                | 0              | 1              | 0.3473257   | 0.4761606                     |
| parcomp                           | 5705                | 0              | 5              | 2.595793    | 1.572126                      |
| compet                            | 5705                | 0              | 1              | 0.2035057   | 0.4026407                     |
| military                          | 4870                | 0              | 1              | 0.0638604   | 0.2445291                     |
| incidence                         | 6260                | 0              | 1              | 0.1615016   | 0.3680224                     |
| violence                          | 6402                | 0              | 11             | 0.6432365   | 1.626178                      |

Source: Author's compilation.



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